



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,451	01/11/2002	Peter W. Richards	P46-US	8440
26148	7590	06/03/2005	EXAMINER	
REFLECTIVITY, INC. 350 POTRERO AVENUE SUNNYVALE, CA 94085			TRAN, TRANG U	
			ART UNIT	PAPER NUMBER
			2614	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/044,451

Applicant(s)

RICHARDS ET AL.

Examiner

Trang U. Tran

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on December 10, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19-52, 54-67 and 69-73 is/are rejected.
- 7) ☒ Claim(s) 18, 53 and 68 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-73 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 7-9, 36-37, 42-44, 55-56 and 58-63 are rejected under 35 U.S.C. 102(b) as being anticipate by Poradish et al (US Patent No. 5,650,832).

In considering claim 1, Poradish et al discloses all the claimed subject matter, note 1) the claimed a color wheel comprising a set of segments, one of which is constructed such that, when intersected by a first circle having a first radius and centered as the same center of the color wheel, a first arc of the first circle within said segment occupies a first percentage of the circumference of the first circle; when intersected by a second circle having a second radius and centered as the same center of the color wheel, a second arc of the second circle within said segment occupies a second percentage of the circumference of the second circle is met by the color filter wheel 15' (Fig. 4, col. 5, line 50 to col. 6, line 10).

In considering claim 2, the claimed wherein the color wheel further comprises colored segments which comprise one red, one green and one blue segment is met by the color filter wheel 15' (Fig. 4, col. 5, line 50 to col. 6, line 10).

In considering claim 7, the claimed wherein the at least one segment does not extend completely across the width of the color wheel in the radial direction of the wheel is met by the color wheel 15' which has a second filter ring 43 has filters with one or more different color saturation values and the R and B colors of filter ring 41 do not extend completely across the width of the color wheel in the radial direction of the wheel (Fig. 4, col. 5, line 50 to col. 6, line 10).

In considering claim 8, the claimed wherein the at least one segment provides higher brightness for each frame when the wheel is rotated in a projection system is met by the **color wheel 15, color wheel 15' provides a choice of more saturated colors with less intensity or less saturated color that are brighter** (Fig. 4, col. 5, line 50 to col. 6, line 10).

In considering claim 9, the claimed wherein the at least one segment provides increased color saturation for each frame when the wheel is rotated in a projection system is met by the **color wheel 15, color wheel 15' provides a choice of more saturated colors with less intensity or less saturated color that are brighter** (Fig. 4, col. 5, line 50 to col. 6, line 10).

In considering claim 36, Poradish et al discloses all the claimed subject matter, note 1) the claimed a projection system (Fig. 1) comprising: a light source is met by the light source 16 (Fig. 1, col. 2, lines 42-56), 2) the claimed the color wheel of claim 1 is

met by the color wheel 15' (Fig. 4, col. 5, line 50 to col. 6, line 10), 3) the claimed a spatial light modulator is met by the spatial light modulator (SLM) 14 (Fig. 1, col. 3, lines 32-67), and 4) the claimed projection optics is met by the projection optics 17a, 17b (Fig. 1, col. 3, line 32 to col. 4, line 46).

Claim 37 is rejected for the same reason as discussed in claim 2.

Claims 42-44 are rejected for the same reason as discussed in claims 7-9, respectively.

In considering claim 55, the claimed the claimed wherein the spatial light modulator is a Micro mirror array is met by the SLM 14 may be any type of SLM, for purposes of example, this description is in terms of a display system whose SLM 14 is a digital micro-mirror device (DMD) (Fig. 1, col. 3, lines 56-67).

In considering claim 56, the claimed wherein the light source is a white light source is met by the light source 16 (Fig. 1, col. 2, lines 42-56).

In considering claim 58, the claimed wherein the projection system further comprises a target is met by the projector display device (CRT) (Fig. 1).

In considering claim 59, the claimed wherein the projection system is a front or rear screen television or computer monitor is met by the projector display device (CRT) (Fig. 1).

In considering claim 60, the claimed further comprising a housing and a knob or button for mechanically moving the color wheel so as to increase or decrease brightness is met by the color wheel assembly by placing motor 15a on a track 31, it can be moved along this track 31 and once a desired position is obtained, locked into place

Art Unit: 2614

for operation, the position of the wheel 15, whether it is moved with only shaft 15b or with the entire color wheel assembly, **can be by manual operation**, or in more complex embodiments, could be automatic (Fig. 3, col. 5, lines 40-49).

Claim 61 is rejected for the same reason as discussed in claim 36.

Claim 62 is rejected for the same reason as discussed in claim 2.

Claim 63 is rejected for the same reason as discussed in claim 2.

4. Claims 20 and 69-70 are rejected under 35 U.S.C. 102(b) as being anticipated by D. P. Doncaster (US Patent No. 2,339,256).

In considering claim 20, D. P. Doncaster discloses all the claimed subject matter, note 1) the claimed a color wheel having a plurality of filter segments adjacent each other around the circumference of the wheel, wherein at least one of the transitions from one filter segment to the next is curved, and wherein at least another one of the transitions immediately following said one transition is curved but in opposite direction to said one transition is met by the color filter wheel 15 which has the transition between segments is curved and opposite direction (Fig. 6, col. 4, line 34 to col. 5, line 30).

Claim 69 is rejected for the same reason as discussed in claim 20.

In considering claim 70, the claimed wherein the segments comprise a set of primary colors of red, green and blue is met by the red, green and blue segments 16 of the color wheel 15 (Fig. 6, col. 2, line 48 to col. 3, line 18).

5. Claim 73 is rejected under 35 U.S.C. 102(b) as being anticipated by E. H. Traub (US Patent No. 2,417,621).

In considering claim 73, E. H. Traub discloses all the claimed subject matter, note 1) the claimed a color wheel comprising first and second segments that are boarded at a straight boarder line, wherein said boarder line or an extension of said boarder line does not pass through a center of the color wheel is met by the color wheel D (Fig. 2, col. 3, lines 10-75).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 6, 10-11, 13-17, 19, 38, 41, 45-46, 48-52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al (US Patent No. 5,650,832) in view of Cosentino (US Patent No. 5,103,301).

In considering claim 3, Poradish et al disclose all the limitations of the instant invention as discussed in claims 1 and 2 above, except for providing the claimed wherein the at least one segment is a white segment. Cosentino teaches that the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through, the three red lights through three filters 413a and the three green lights through three filters 413c (Fig. 6, col. 11, lines 49-62). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the white segment as taught by Cosentino into

Poradish et al' system in order to permit the selection of a desired balance between color saturation and brightness for a particular image.

In considering claim 6, Poradish et al disclose all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the at least one segment comprises a transparent or translucent material or no material within that segment of the wheel. Cosentino teaches that the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through, the three red lights through three filters 413a and the three green lights through three filters 413c (Fig. 6, col. 11, lines 49-62). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the white segment as taught by Cosentino into Poradish et al' system in order to permit the selection of a desired balance between color saturation and brightness for a particular image.

In considering claim 10, Poradish et al disclose all the limitations of the instant invention as discussed in claims 1 and 2 above, except for providing the claimed further comprising at least three different filter segments in addition to the at least one segment. Cosentino teaches that the color filter wheel 13 which has the nine filter sectors disposed circumferentially in the order R, B, G, R, B, G, R, B and G (Fig. 2, col. 7, lines 1-30 and col. 11, lines 49-62). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the color wheel as taught by Cosentino into Poradish et al's system since it merely selecting available filters.

In considering claim 11, the claimed wherein the at least three different filter segments occupy, for a given radius, a percentage of the circumference of the wheel at that radius, which percentage remains the same from a radially inward point to a radially outer point on the wheel is met by a typical size of color wheel 15 is approximately 4 inches in diameter for incident light having a spot size of 4-6 millimeters and a percentage of the circumference of the wheel at the radius, which percentage remains the same from a radially inward point to a radially outer point on the wheel (Fig. 2, col. 4, lines 1-25 of Poradish et al).

In considering claim 13, the claimed wherein the at least one segment is at least three segments having a different luminosity and color saturation than an adjacent one of said at least three different filter segments is met by the three clear segment 413b (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 14, the claimed wherein the at least three segments have a higher luminosity than the at last three different filter segments is met by the three clear segment 413b (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 15, the claimed wherein the at least three segments are interspersed between the at least three different filter segments is met by the three clear segment 413b which are interspersed between the three red segments 413A and the green segments 413C (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 16, the claimed wherein the at least three segments are white or yellow segments is met by the three clear segment 413b (white) (Fig. 6, col. 11, lines 49-62 of Cosentino).

Art Unit: 2614

In considering claim 17, Poradish et al disclose all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the percentage increases from a radial inward point to a radial outer point. Cosentino teaches that the color filter wheel 13 which has the percentage increases from a radial inward point to a radial outer point (Figs. 2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the color wheel as taught by Cosentino into Poradish et al's system in order to provide a high degree of intercolor registration, highly artificial and purposely designed conditions, including high intensity lighting.

In considering claim 19, the claimed wherein the percentage increases continuously for the width of the at least one segment in the radial direction of the wheel is met by the color filter wheel 13 which has the percentage increases continuously for the width from a radial inward point to a radial outer point (Figs. 2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62 of Cosentino).

Claim 38 is rejected for the same reason as discussed in claim 3.

Claim 41 is rejected for the same reason as discussed in claim 6.

Claims 45-46 are rejected for the same reason as discussed in claims 10-11, respectively.

Claims 48-52 are rejected for the same reason as discussed in claims 13-17, respectively.

Claim 54 is rejected for the same reason as discussed in claim 19.

Claim 66 is rejected for the same reason as discussed in claim 17.

Art Unit: 2614

8. Claims 4, 39 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Poradish et al (US Patent No. 5,650,832) in view of Guerinot et al (US Patent No. 6,147,720).

In considering claim 4, Poradish et al discloses all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the colored segments further comprise a yellow, cyan and/or magenta segment. Guerinot et al teach that if the projection system is a color sequential system, the rotating annular portion 20 of wheel W that is alternately used in transmission and in reflection can be a color filter wheel as show in Fig. 2B, when seen in transmission, the filters are, for example, in the order: red, green, blue, cyan, magenta and yellow (Figs. 2B-2D, col. 4, line 40 to col. 5, line 55). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the colored segments further comprise a yellow, cyan and/or magenta segment as taught by Guerinot et al into Poradish et al's system in order to allow the light from two lamps to be efficiently multiplexed onto a single light valve, thereby substantially doubling the system brightness (col. 1, lines 45-48 of Guerinot et al).

Claim 39 is rejected for the same reason as discussed in claim 4.

Claim 64 is rejected for the same reason as discussed in claim 4.

9. Claims 5, 40 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Poradish et al (US Patent No. 5,650,832) in view of Kunzman (US Patent No. 6,392,717 B1).

In considering claim 5, Poradish et al discloses all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the at least one segment is a clear glass or polymer. Kunzman teaches that the system of claim 2, wherein the clear segment is clear glass (col. 12, lines 25-28). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the clear glass as taught by Kunzman into Poradish et al' s system since it merely amount of selecting available components.

Claim 40 is rejected for the same reason as discussed in claim 5.

Claim 65 is rejected for the same reason as discussed in claim 5.

10. Claims 12 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al (US Patent No. 5,650,832) in view of Cosentino (US Patent No. 5,103,301), and further in view of Sato (US Patent No. 6,467,910 B1).

In considering claim 12, the combination of Poradish et al and Cosentino discloses all the limitations of the instant invention as discussed in claims 1 and 10 above, except for providing the claimed wherein light passing through the at least three different filter segments is centered around a different wavelength for each segment. Sato teaches that the three or four R, G, B (W) effective light beams L12 having wavelength bands shifted by time are reflected toward the second mirror 14 by the reflection type color wheel 17 (Fig. 1, col. 6, line 64 to col. 7, line 51). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the different wavelength for each segment (shift by time) as taught by Sato into Cosentino's system in order to freely set the reflection type color wheel to any

desired angle other than a right angle with respect to an optical axis of white light emitted from the light source and to make the diameter of the reflection type color wheel larger without increasing the overall height of the apparatus (col. 4, lines 48-53 of Sato).

Claim 47 is rejected for the same reason as discussed in claim 12.

11. Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al (US Patent No. 5,650,832) in view of Guerinot et al (US Patent No. 6,147,720).

In considering claim 57, Poradish et al discloses all the limitations of the instant invention as discussed in claims 36 and 56 above, except for providing the claimed the claimed wherein the white light source is a halogen lamp, a xenon arc lamp, a UHP arc lamp or a white light laser. Guerinot et al teach that one suitable lamp from the point of view of long life and high lumens per watt is the 100 W UHP lamp available from Philips Lighting, or similar lamps available from other manufacturers (col. 1, lines 20-31).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the UHP lamp as taught by Guerinot et al into Poradish et al's system since it merely amount of selecting available lamps.

12. Claims 21-26 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over D. P. Doncaster (US Patent No. 2,339,256) in view of Cosentino (US Patent No. 5,103,301).

In considering claim 21, D. P. Doncaster discloses all the claimed subject matter, note 1) the claimed wherein the plurality of filter segments comprise at least three color segments is met by the red, green and blue segments 16 of the color wheel 15 (Fig. 6, col. 2, line 48 to col. 3, line 18). However, D. P. Doncaster explicitly do not disclose the

Art Unit: 2614

claimed at least one white segment. Cosentino teaches that the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through, the three red lights through three filters 413a and the three green lights through three filters 413c (Fig. 6, col. 11, lines 49-62). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the white segment as taught by Cosentino into D. P. Doncaster's system in order to permit the selection of a desired balance between color saturation and brightness for a particular image.

In considering claim 22, the claimed wherein the at least three color segments comprise red, green and blue is met by the red, green and blue segments 16 of the color wheel 15 (Fig. 6, col. 2, line 48 to col. 3, line 18 of D. P. Doncaster).

Claim 23 is rejected for the same reason as discussed in claim 21.

In considering claim 24, the claimed wherein one or more of the filter segments comprises an edge defining a transition to an adjacent filter segment that does not lie on radius of the wheel is met by the color filter wheel 13 which has edge defining a transition to an adjacent filter segment that does not lie on radius of the wheel (curved line) (Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62 of Cosentino).

In considering claim 25, the claimed wherein the at least one segment for providing white, yellow or orange light comprises edges facing adjacent filter segments that are curved or stepped is met by the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white

light to pass through and the clear segment 413b which has edges facing adjacent filter segments that are curved (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 26, the claimed wherein the at least one segment for providing white, yellow or orange light comprises at least three white segments disposed between color segments is met by the three clear segment 413b (Fig. 6, col. 11, lines 49-62 of Cosentino).

Claim 72 is rejected for the same reason as discussed in claim 21.

13. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over D. P. Doncaster (US Patent No. 2,339,256) in view of Cosentino (US Patent No. 5,103,301), as applied to claims 20 and 21 above, and further in view of Kunzman (US Patent No. 6,536,904 B2).

In considering claim 27, Cosentino discloses all the claimed subject matter, note 1) the claimed wherein one of the at least three color segments has edges abutting adjacent filter segments that do not lie along the radius of the color wheel is met by the color filter wheel 13 in which the red segment or green segment or blue segment has sides facing adjacent filter segments that do not lie on the radius of the wheel (curved) (Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62). However, the combination of D. P. Doncaster and Cosentino explicitly does not disclose the claimed wherein one of the at least three color segments is not disposed adjacent the at least one white segment. Kunzman teaches that sequential systems sometimes add a white (clear) segment to the color wheel 20, as show in Fig. 2a, and the green (G) segment is not disposed adjacent the at least one white segment (Fig. 2a, col. 1, lines 37-51).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the green (G) segment is not disposed adjacent the at least one white segment as taught by Kunzman into the combination of D. P. Doncaster and Cosentino's system in order to display some portion of the luminance signal during the white segment time to provide the brighter picture on the display (col. 1, lines 37-51 of Kunzman).

14. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cosentino (US Patent No. 5,103,301) in view of E. H. Traub (US Patent No. 2,417,621).

In considering claim 28, Cosentino discloses all the claimed subject matter, note 1) the claimed a color wheel having a plurality of filter segments adjacent each other around the circumference of the wheel, wherein at least one of the segments is a higher brightness segment than the others and has sides facing adjacent filter segments; wherein said sides are not along the radiuses of the wheel is met by the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through and has sides facing adjacent filter segments that do not lie on the radius of the wheel (curved) (Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62). However, Cosentino explicitly does not disclose the newly added limitation wherein said adjacent segments are immediately bordered.

E. H. Traub teaches that Fig. 2 is the dot-and-dash segments and the dot segment has sides facing adjacent filter segments and said adjacent segments are immediately bordered (Fig. 2, col. 3, lines 10-75).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the color wheel as taught by E. H. Traub into Cosentino's system in order to produce the natural color effects by means of a rotating color-filter member arranged in the path of light projection.

In considering claim 29, the claimed wherein the plurality of filter segments comprise at least three color segments and at least one white segment is met by the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through, the three red lights through three filters 413a and the three green lights through three filters 413c (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 30, the claimed wherein the at least three color segments comprise red, green and blue is met by the color filter wheel 13 which contains several sets of three monochromatic filter sectors 13a in red, 13b in blue and 13c in green, all of equal area (Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62 of Cosentino).

In considering claim 31, the claimed wherein the plurality of filter segments comprise at least three color segments and at least one segment for providing white, yellow or orange light is met by the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through, the three red lights through three filters 413a and the three green lights through three filters 413c (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 32, the claimed wherein one or more of the filter segments comprises an edge defining a transition to an adjacent filter segment that does not lie on

radius of the wheel is met by the color filter wheel 13 which has edge defining a transition to an adjacent filter segment that does not lie on radius of the wheel (curved line) (Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62 of Cosentino).

In considering claim 33, the claimed wherein the at least one segment for providing white, yellow or orange light comprises edges facing adjacent filter segments that are curved or stepped is met by the color filter wheel 13 which removes the blue filters and leaving the openings 413b clear, (Fig. 6) allows all the components of white light to pass through and the clear segment 413b which has edges facing adjacent filter segments that are curved (Fig. 6, col. 11, lines 49-62 of Cosentino).

In considering claim 34, the claimed wherein the at least one segment for providing white, yellow or orange light comprises at least three white segments disposed between color segments is met by the three clear segment 413b (Fig. 6, col. 11, lines 49-62 of Cosentino).

15. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cosentino (US Patent No. 5,103,301) in view of E. H. Traub (US Patent No. 2,417,621), as applied to claims 28 and 29 above, and further in view of Kunzman (US Patent No. 6,536,904 B2).

In considering claim 35, Cosentino discloses all the claimed subject matter, note 1) the claimed wherein one of the at least three color segments has edges abutting adjacent filter segments that do not lie along the radius of the color wheel is met by the color filter wheel 13 in which the red segment or green segment or blue segment has sides facing adjacent filter segments that do not lie on the radius of the wheel (curved)

(Figs. 1-2 and 6, col. 7, lines 1-30 and col. 11, lines 49-62). However, the combination of Cosentino and E. H. Traub explicitly does not disclose the claimed wherein one of the at least three color segments is not disposed adjacent the at least one white segment. Kunzman teaches that sequential systems sometimes add a white (clear) segment to the color wheel 20, as show in Fig. 2a, and the green (G) segment is not disposed adjacent the at least one white segment (Fig. 2a, col. 1, lines 37-51). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the green (G) segment is not disposed adjacent the at least one white segment as taught by Kunzman into the combination of Cosentino and E. H. Traub's system in order to display some portion of the luminance signal during the white segment time to provide the brighter picture on the display (col. 1, lines 37-51 of Kunzman).

16. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of D. P. Doncaster (US Patent No. 2,339,256) in view of Guerinot et al (US Patent No. 6,147,720).

In considering claim 4, D. P. Doncaster discloses all the limitations of the instant invention as discussed in claim 69 above, except for providing the claimed wherein the segments comprise a set of primary colors of yellow, cyan and magenta. Guerinot et al teach that if the projection system is a color sequential system, the rotating annular portion 20 of wheel W that is alternately used in transmission and in reflection can be a color filter wheel as show in Fig. 2B, when seen in transmission, the filters are, for example, in the order: red, green, blue, cyan, magenta and yellow (Figs. 2B-2D, col. 4,

Art Unit: 2614

line 40 to col. 5, line 55). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the colored segments further comprise a yellow, cyan and/or magenta segment as taught by Guerinot et al into D. P.

Doncaster's system in order to allow the light from two lamps to be efficiently multiplexed onto a single light valve, thereby substantially doubling the system brightness (col. 1, lines 45-48 of Guerinot et al).

17. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al (US Patent No. 5,650,832) in view of Cosentino (US Patent No. 5,103,301), and further in view of D. P. Doncaster (US Patent No. 2,339,256).

In considering claim 67, the combination of Poradish et al and Cosentino disclose all the limitations of the instant invention as discussed in claims 61 and 66 above, except for providing the claimed wherein the neighboring boundaries are curved in opposite directions. D. P. Doncaster teaches that the color filter wheel 15 which has the transition between segments is curved and opposite direction (Fig. 6, col. 4, line 34 to col. 5, line 30). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the color wheel as taught by D. P. Doncaster into the combination of Poradish et al and Cosentino's system in order to provide the provision of apparatus which will permit more freedom in the design of a compact, attractive cabinet.

Allowable Subject Matter

Art Unit: 2614

18. Claims 18, 53 and 68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2614

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT TT
May 28, 2005



JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600